

DRAFT FINAL OU1 - REMEDIAL ACTION REVISION 1 LIBBY ASBESTOS PROJECT LIBBY, MT

February 2012

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US EPA
Region VIII
Denver, Colorado



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM



IMAGE PROVIDED BY GOOGLE EARTH™
NTS

LOCATION PLAN

CDM Federal Programs Corporation
LIBBY, MONTANA

Consulting

Engineering

Construction

Operations

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GENERAL NOTES:

1. THE "CONTRACT DOCUMENTS", REFERENCED HEREIN, INCLUDE THE RESPONSE ACTION WORK PLAN (RAWP) WITH APPLICABLE ADDENDA, AND THIS REMOVAL DESIGN.

2. THE REMOVAL CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN IN THE CONTRACT DOCUMENTS.

3. MATERIALS GENERATED FROM THE RESPONSE ACTION SHALL BE TRANSPORTED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS, AS SPECIFIED IN THE CONTRACT DOCUMENTS.

4. THE REMOVAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM SECURITY TO SECURE THE WORK AREA, AS WELL AS THE REMOVAL CONTRACTOR'S FACILITIES AND EQUIPMENT WITHIN THE LIMITS OF THE SITE.

5. TOPOGRAPHIC SURVEYS, WERE PERFORMED BY DAVIS SURVEYING, INC. OF TROY, MONTANA. HORIZONTAL POSITION OF THE SURVEY IS BASED ON MONTANA STATE PLANE COORDINATE SYSTEM, LAMBERT CONFORMAL CONIC PROJECTION, NAD1983 (CONUS). SURVEYED ELEVATIONS ARE BASED ON THE NAVD88 DATUM. SURVEYED PLANS INCLUDE PROPERTY BOUNDARIES AND/OR DETAILS FOR THE EXCAVATION AREAS ONLY. SURVEYED DRAWINGS ARE NOT WARRANTED TO BE COMPLETE, BUT ARE SUITABLE FOR CONSTRUCTION PLANNING PURPOSES.

6. REMOVAL CONTRACTOR SHALL UTILIZE APPROPRIATE ENGINEERING CONTROLS IN ALL AREAS OF REMEDIATION TO ENSURE CONTAMINANT MIGRATION DOES NOT OCCUR AS A RESULT OF THE REMOVAL ACTIVITY.

7. UTILITIES, IF SHOWN ON THE DRAWINGS, ARE FOR INFORMATION ONLY. THE REMOVAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING ITEMS, UTILITIES, AND STRUCTURES NOT OTHERWISE DESIGNATED FOR REMOVAL. IT IS THE REMOVAL CONTRACTOR'S RESPONSIBILITY TO SATISFY THEMSELVES THAT ALL EXISTING UTILITIES AND OTHER ITEMS, WHETHER SHOWN ON THE CONTRACT DRAWINGS OR NOT, HAVE BEEN PROPERLY LOCATED. THE REMOVAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND REPORTING UTILITY CLEARANCES TO THE GOVERNMENT REPRESENTATIVE, AS SPECIFIED IN THE CONTRACT DOCUMENTS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

8. THE REMOVAL CONTRACTOR SHALL PROTECT ALL PERMANENT SITE FIXTURES BORDERING OR WITHIN AREAS TO BE EXCAVATED, INCLUDING BUT NOT LIMITED TO BUILDING FOUNDATION AND FACADE, FENCES, TREES, SHRUBS/BUSHES, ASPHALT, AND CONCRETE, UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. ANY ITEMS DAMAGED DURING CONSTRUCTION OR REMOVAL ACTIVITIES SHALL BE REPAIRED OR REPLACED--IN--KIND, AT THE DIRECTION OF THE GOVERNMENT.

9. ALL REMEDIATION AND RESTORATION WORK IS SUBJECT TO INSPECTION AND APPROVAL BY THE GOVERNMENT REPRESENTATIVE.

10. THE REMOVAL CONTRACTOR IS RESPONSIBLE FOR ALL PROJECT SAFETY AS DETAILED IN THE GOVERNMENT APPROVED COMPREHENSIVE ACCIDENT PREVENTION PLAN.

11. THE GOVERNMENT SHALL OBTAIN ALL AGREEMENTS NECESSARY TO ACCESS THE SITE REQUIRING REMEDIATION. THE CONTRACTOR IS NOT ALLOWED TO PERFORM WORK ON ANY PROPERTY WITHOUT AN ACCESS AGREEMENT.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNATING A COMPETENT PERSON TO COMPLETE THE APPROPRIATE INSPECTIONS AS OUTLINED IN THE CURRENT VERSION OF THE RAWP.

13. WORK DEFINED IN THIS DRAWING SET IS BASED ON WGM GROUP, MISSOULA, MT, RIVERFRONT PARK GRADING, STREET, AND STORM DRAINAGE IMPROVEMENTS PLANS (RELEASED FOR CONSTRUCTION DATED SEPTEMBER 14, 2011). THIS CONSTRUCTION PACKAGE IS PROVIDED AS AN ATTACHEMENT TO THIS DRAWING SET.

14. REMOVAL CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND STATE OF MONTANA LAWS GOVERNING ALL WORK SITE ACTIVITIES.

15. ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS MUST BE ACCEPTED BY THE GOVERNMENT REPRESENTATIVE, IN WRITING, PRIOR TO THE WORK BEING DONE.

16. THE REMOVAL CONTRACTOR SHALL HAVE A COPY OF THE CONTRACT DOCUMENTS AT THE WORK AREAS AT ALL TIMES.

17. THE CONSTRUCTION EQUIPMENT SHALL BE IN GOOD WORKING ORDER AND SHALL BE EQUIPPED TO MEET THE NOISE REDUCTION REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS.

18. NOTES INCLUDED HERE APPLY TO ALL SHEETS UNLESS OTHERWISE NOTED. REFER TO CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.

19. THE REMOVAL CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 EDITION, TO BE APPROVED BY THE GOVERNMENT REPRESENTATIVE.

20. REMOVAL CONTRACTOR SHALL MAINTAIN SURVEY STAKES AND DAMAGED OR REMOVED STAKES SHALL BE REPLACED IN KIND.

21. ALL VOLUMES ESTIMATES ARE PRESENTED AS "IN--PLACE" VOLUMES.

REMEDATION NOTES:

1. THE REMOVAL CONTRACTOR SHALL INSTALL AND MAINTAIN APPROPRIATE EROSION AND SEDIMENT CONTROLS (I.E., SILT FENCES, TEMPORARY WATER RETENTION BERMS, EROSION CONTROL MATS) PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. INSTALLATION AND MAINTENANCE SHALL MEET THE MINIMUM REQUIREMENTS ESTABLISHED IN THE CONTRACT DOCUMENTS.

2. THE REMOVAL CONTRACTOR SHALL PERFORM ALL SITE PREPARATION, DECONTAMINATION, AND DEMOLITION ACTIVITIES, PRIOR TO REMOVAL OF CONTAMINATED SOIL.

3. EXCAVATION LIMITS DEPICTED ON THESE DRAWINGS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE BASED ON VISUAL INSPECTION AND CONFIRMATION SOIL SAMPLING CONDUCTED DURING EXCAVATION ACTIVITIES. CONFIRMATORY SOIL SAMPLING AND VISUAL INSPECTION SHALL BE CONDUCTED BY THE GOVERNMENT REPRESENTATIVE IN ACCORDANCE WITH THE RESPONSE ACTION SAMPLING AND ANALYSIS PLAN, REVISION 3.

4. ALL MOVEABLE SITE FIXTURES SHALL EITHER BE DISMANTLED/REMOVED, DISPOSED OF, AND REPLACED; OR REMOVED, DECONTAMINATED, AND TEMPORARILY RELOCATED FROM THE INITIAL EXCLUSION ZONE, UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. SITE FIXTURES THAT ARE NOT MOVEABLE SHALL BE PROTECTED IN--PLACE.

5. ADDITIONAL SITE FIXTURES MAY REQUIRE PROTECTION OR REMOVAL IF EXCAVATIONS EXTEND BEYOND THE INITIAL EXCAVATION LIMITS OR IF THE GOVERNMENT REPRESENTATIVE IDENTIFIES ADDITIONAL SITE FIXTURES DURING CONSTRUCTION. REMOVAL, DISPOSAL, DECONTAMINATION, AND STORAGE OF ANY ADDITIONAL FIXTURES ENCOUNTERED DURING CONSTRUCTION, WHICH MAY OR MAY NOT BE IDENTIFIED ON THE CONTRACT DRAWINGS, SHALL BE HANDLED IN ACCORDANCE WITH THE DESIGN CRITERIA ESTABLISHED IN THE CONTRACT DOCUMENTS.

6. THE REMOVAL CONTRACTOR SHALL PROTECT ALL PROPERTY PINS OR SURVEY MARKERS DURING ALL ACTIVITIES. IF A PROPERTY PIN OR SURVEY MARKER IS DISTURBED DURING CONSTRUCTION ACTIVITIES, A REGISTERED SURVEYOR IN THE STATE OF MONTANA SHALL RELOCATE SAID PIN OR MARKER TO ITS CORRECT LOCATION.

7. A MARKER BARRIER (ORANGE CONSTRUCTION FENCE) SHALL BE INSTALLED BETWEEN THE UNDISTURBED AREAS SURFACE AND THE RESTORATION MATERIAL.

8. IF REMEDIAL ACTIVITIES SPAN MORE THAN ONE CONSTRUCTION SEASON, THE REMOVAL CONTRACTOR SHALL DEVELOP A TEMPORARY SITE CLOSURE PLAN TO BE APPROVED BY THE GOVERNMENT REPRESENTATIVE. THE TEMPORARY SITE CLOSURE PLAN WILL INCLUDE DETAILS FOR SECURING THE SITE IN A MANNER TO ENSURE THAT CONTAMINATION MIGRATION DOES NOT OCCUR, LIMIT DAMAGE TO THE SITE, LIMIT ALL PUBLIC ACCESS TO AREAS THAT ARE NOT COMPLETE, AND MAINTENANCE OF ALL SITE SECURITY AND STORMWATER MANAGEMENT FEATURES UNTIL REMEDIAL ACTIVITIES RESUME.

RESTORATION NOTES:

1. RESTORATION SHALL COMMENCE ONLY AFTER EXCAVATION ACTIVITIES ARE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

2. THE REMOVAL CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROLS, PREVIOUSLY INSTALLED DURING EXCAVATION ACTIVITIES, THROUGHOUT THE DURATION OF RESTORATION ACTIVITIES. INSTALLATION AND MAINTENANCE SHALL MEET THE MINIMUM REQUIREMENTS ESTABLISHED IN THE CONTRACT DOCUMENTS.

3. RESTORATION WORK ASSOCIATED WITH THIS REMEDIATION ACTION ENTAILS PLACEMENT AND COMPACTION OF GRANULAR MATERIALS (I.E., COMMON FILL, TOPSOIL, AND STRUCTURAL FILL), AND REPLACEMENT AND/OR REINSTALLATION OF SITE FIXTURES TO THEIR ORIGINAL POSITIONS ON THE SITE, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

4. EXCAVATIONS SHALL BE BACKFILLED WITH SELECTED FILL MATERIALS (I.E., COMMON FILL, TOPSOIL, RIPRAP, WASHED ROCK, 3/4" MINUS, 1.5 TO 4" MATERIAL, 3' MINUS BASE--COARSE, ADN 3 TO 8" DRAIN ROCK), TO DEPTHS SPECIFIC TO EACH TYPE OF RESTORATION. RESTORATION TYPE REQUIREMENTS ARE DESIGNATED ON THE DETAIL DRAWINGS. RESTORATION LIMITS ARE SUBJECT TO CHANGE AND SHALL BE BASED ON FINAL CONTAMINATED SOIL EXCAVATION LIMITS.

5. THE REMOVAL CONTRACTOR SHALL RESTORE ALL TEMPORARILY DISPLACED FIXTURES TO THEIR ORIGINAL LOCATIONS, AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY SITE FIXTURES SPECIFIED TO BE REPLACED ON THE CONTRACT DRAWINGS SHALL BE REPLACED IN--KIND.

6. FINISHED TOPOGRAPHIC GRADES OF BACKFILLED EXCAVATIONS SHALL BE RESTORED AS SPECIFIED ON DRAWINGS. IF FINAL GRADING IS REQUIRED NEAR A BUILDING OR FOUNDATION, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM THE STRUCTURE TO THE EXTENT PRACTICABLE.

7. RESTORED MATERIALS WHICH DO NOT MEET THE APPROVAL OF THE GOVERNMENT REPRESENTATIVE, AS DETERMINED BY THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, ARE SUBJECT TO REPLACEMENT AND REINSTALLATION BY THE CONTRACTOR.

8. THE REMOVAL CONTRACTOR SHALL PROVIDE RED--LINE/AS BUILT DRAWINGS AT THE COMPLETION OF THIS REMEDIAL ACTION. THE REMOVAL CONTRACTOR SHALL UPDATE THESE DRAWINGS AT THE COMPLETION OF FINAL GRADING AND RESTORATION AS NECESSARY TO PROVIDE FINAL SITE CONDITIONS.

GENERAL MATERIALS LEGEND

TOPSOIL

COMMON FILL

3/4" MINUS CRUSHED BASE COURSE

PIT RUN GRAVEL

UNDISTURBED GROUND

2--3" MINUS CRUSHED GRAVEL

Revisions

Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	8/30/11	GM

CDM Federal Programs Corporation

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
K. MAINZHAUSEN
T. JOHNSON

Drawn by:
K. HUFFSMITH

Checked by:
G. MCKENZIE

Submitted by:
G. MCKENZIE

LIBBY ASBESTOS PROJECT
LIBBY, MONTANA

US EPA
Region VIII
Denver, Colorado

OU1--REMEDIAL ACTION
GENERAL NOTES

Scale:

Date: SEPTEMBER 2011

Dwg. No.: 2

Sheet number:
G2

Plot Scale:

Design File:

File No.: GENERAL NOTES.dwg

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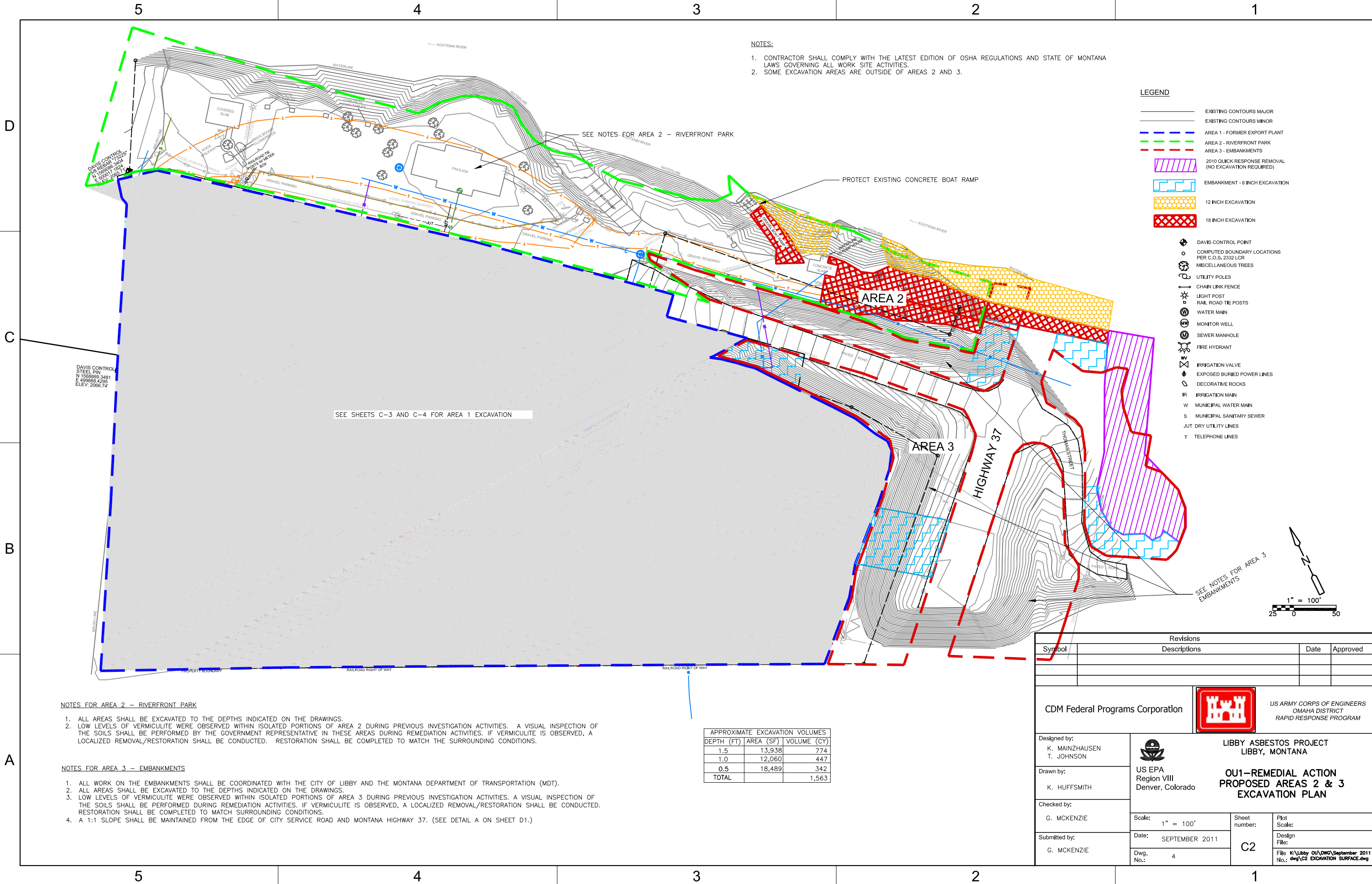
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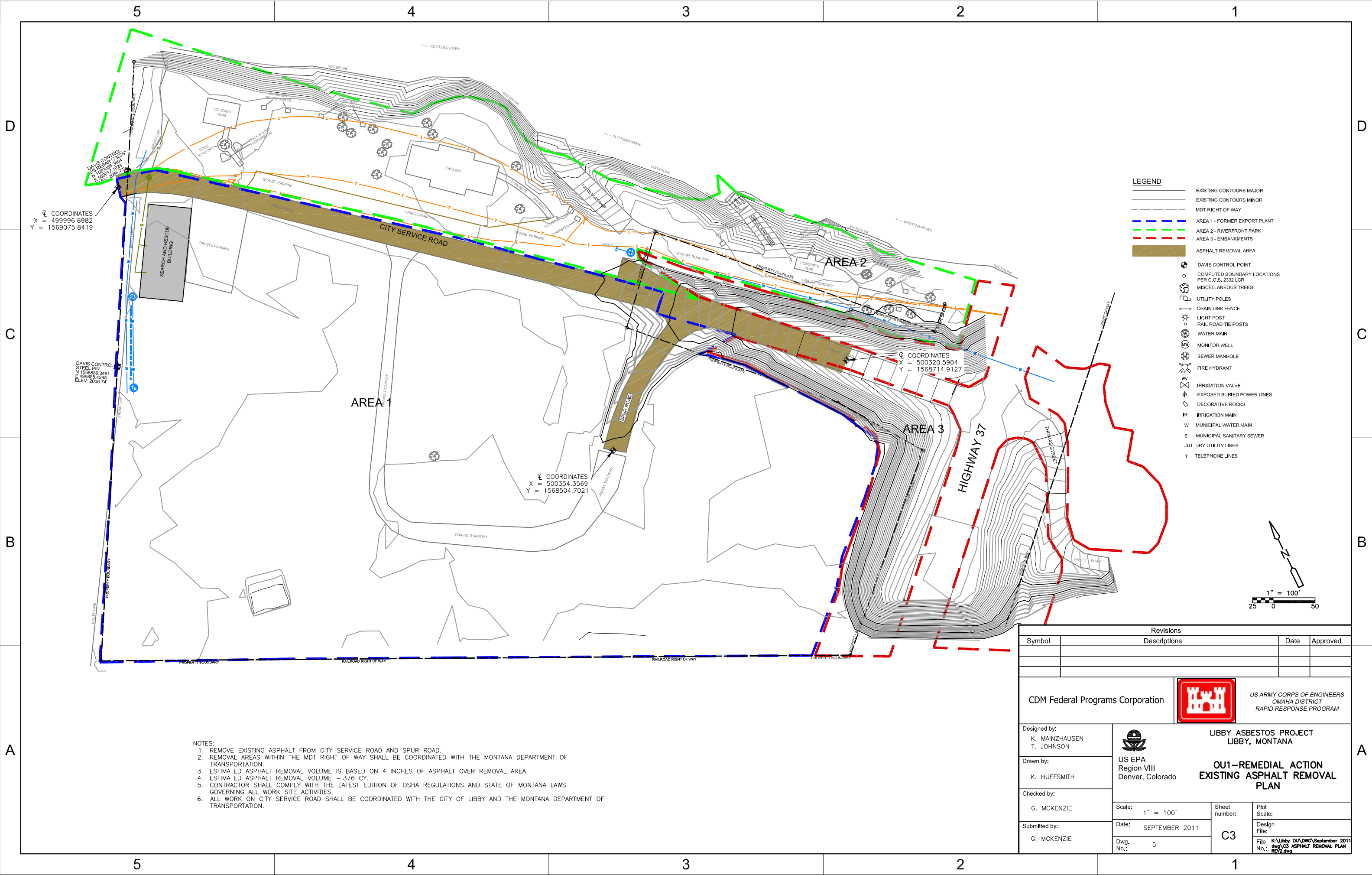
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DOUG ROLL, CITY OF LIBBY MAYOR

DATE






- NOTES:
1. REMOVE EXISTING ASPHALT FROM CITY SERVICE ROAD AND SPUR ROAD.
 2. REMOVAL AREAS WITHIN THE MDT RIGHT OF WAY SHALL BE COORDINATED WITH THE MONTANA DEPARTMENT OF TRANSPORTATION.
 3. ESTIMATED ASPHALT REMOVAL VOLUME IS BASED ON 4 INCHES OF ASPHALT OVER REMOVAL AREA.
 4. ESTIMATED ASPHALT REMOVAL VOLUME - 376 CY.
 5. CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND STATE OF MONTANA LAWS GOVERNING ALL WORK SITE ACTIVITIES.
 6. ALL WORK ON CITY SERVICE ROAD SHALL BE COORDINATED WITH THE CITY OF LIBBY AND THE MONTANA DEPARTMENT OF TRANSPORTATION.

Revisions			
Symbol	Descriptions	Date	Approved

CDM Federal Programs Corporation




US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
K. MAINZHAUSEN
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US EPA
Region VIII
Denver, Colorado

LIBBY ASBESTOS PROJECT
LIBBY, MONTANA

**OU1-REMEDIAL ACTION
EXISTING ASPHALT REMOVAL
PLAN**

Scale: 1" = 100'

Date: SEPTEMBER 2011

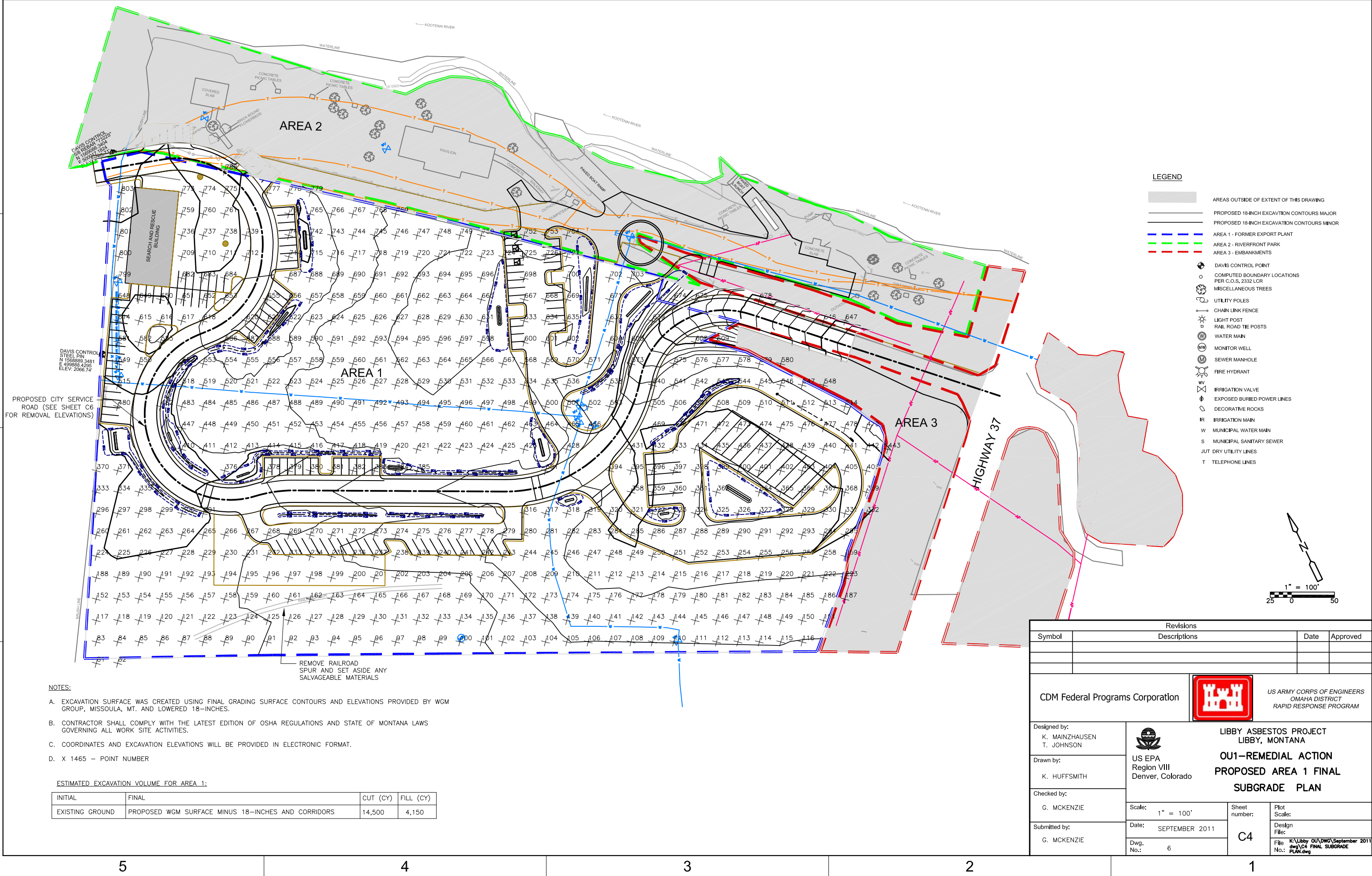
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Sheet number: C3

Plot Scale:

Design File:

File: K:\Libby OU\DWG\September 2011
deg\CS ASPHALT REMOVAL PLAN
REV2.dwg



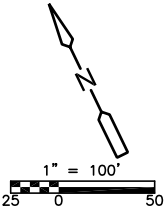
- NOTES:
- A. EXCAVATION SURFACE WAS CREATED USING FINAL GRADING SURFACE CONTOURS AND ELEVATIONS PROVIDED BY WGM GROUP, MISSOULA, MT. AND LOWERED 18-INCHES.
 - B. CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND STATE OF MONTANA LAWS GOVERNING ALL WORK SITE ACTIVITIES.
 - C. COORDINATES AND EXCAVATION ELEVATIONS WILL BE PROVIDED IN ELECTRONIC FORMAT.
 - D. X 1465 - POINT NUMBER

ESTIMATED EXCAVATION VOLUME FOR AREA 1:

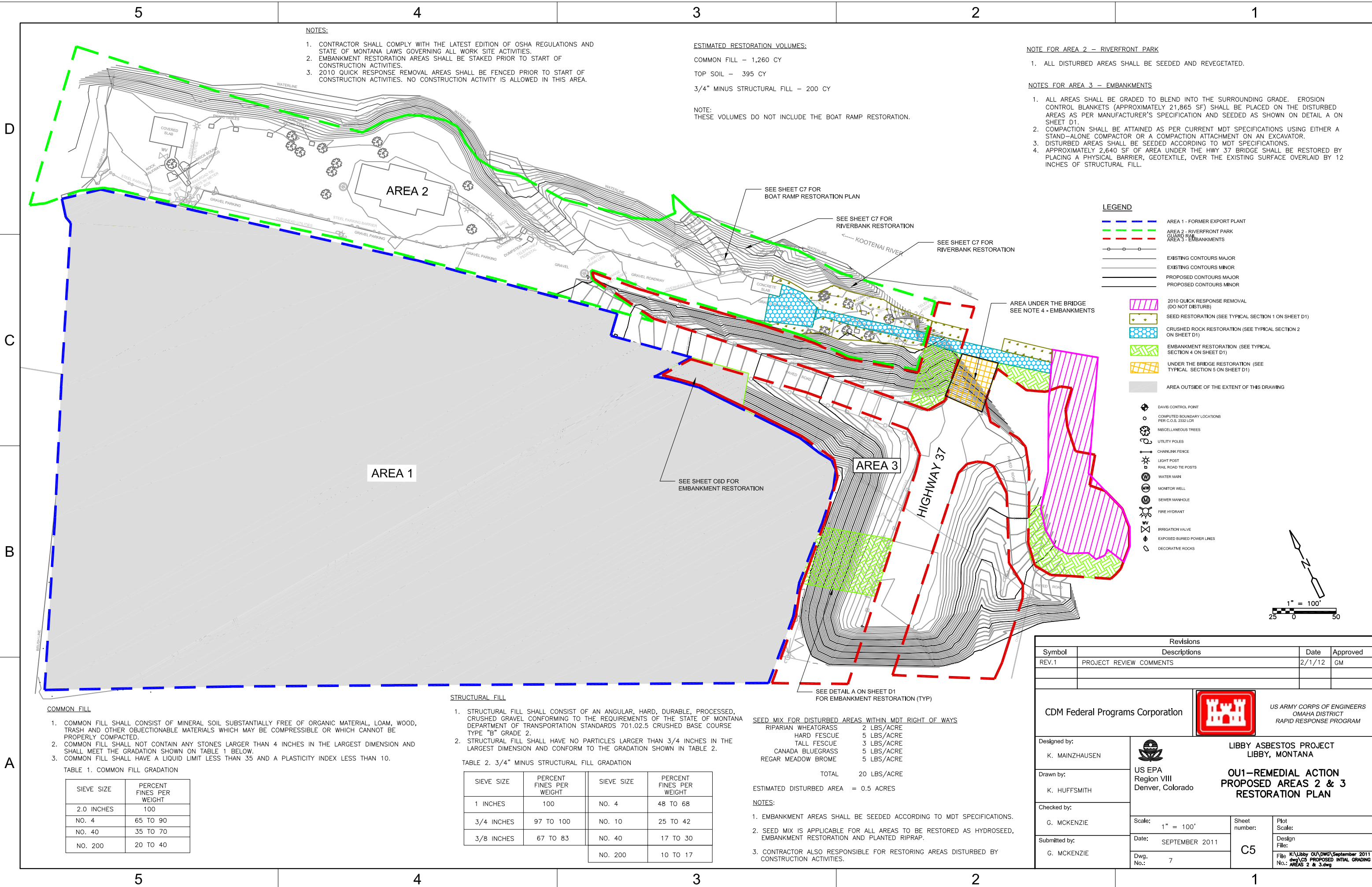
INITIAL	FINAL	CUT (CY)	FILL (CY)
EXISTING GROUND	PROPOSED WGM SURFACE MINUS 18-INCHES AND CORRIDORS	14,500	4,150

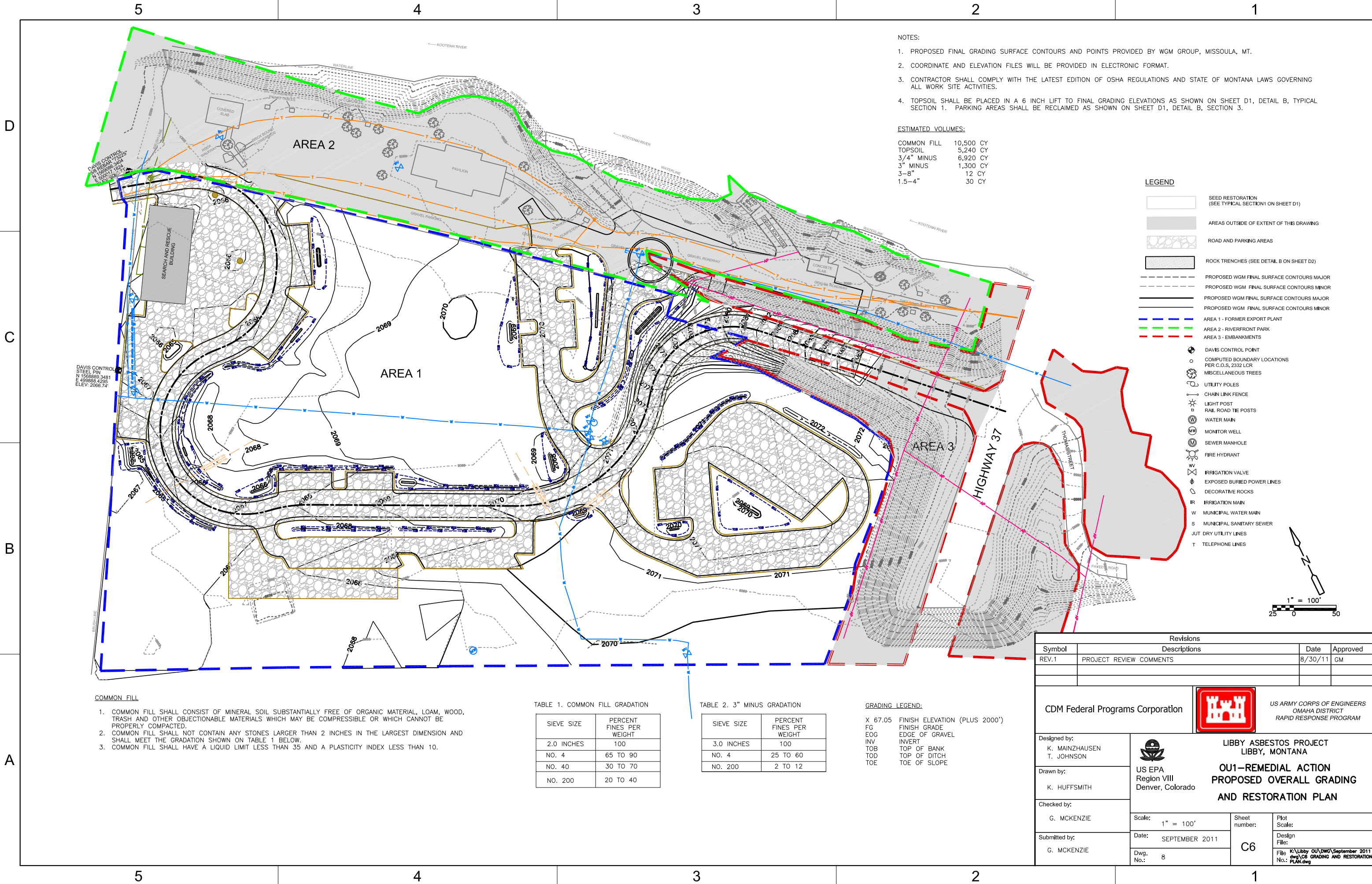
LEGEND

- AREAS OUTSIDE OF EXTENT OF THIS DRAWING
- PROPOSED 18-INCH EXCAVATION CONTOURS MAJOR
- PROPOSED 18-INCH EXCAVATION CONTOURS MINOR
- AREA 1 - FORMER EXPORT PLANT
- AREA 2 - RIVERFRONT PARK
- AREA 3 - EMBANKMENTS
- DAVIS CONTROL POINT
- COMPUTED BOUNDARY LOCATIONS PER C.O.S. 2332 LCR
- MISCELLANEOUS TREES
- UTILITY POLES
- CHAIN LINK FENCE
- LIGHT POST
- RAIL ROAD TIE POSTS
- WATER MAIN
- MONITOR WELL
- SEWER MANHOLE
- FIRE HYDRANT
- IRRIGATION VALVE
- EXPOSED BURIED POWER LINES
- DECORATIVE ROCKS
- IRRIGATION MAIN
- MUNICIPAL WATER MAIN
- MUNICIPAL SANITARY SEWER
- JUT DRY UTILITY LINES
- TELEPHONE LINES



Revisions			
Symbol	Descriptions	Date	Approved
CDM Federal Programs Corporation		US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM	
Designed by: K. MAINZHAUSEN T. JOHNSON	US EPA Region VIII Denver, Colorado	LIBBY ASBESTOS PROJECT LIBBY, MONTANA OU1-REMEDIAL ACTION PROPOSED AREA 1 FINAL SUBGRADE PLAN	
Drawn by: K. HUFFSMITH		Scale: 1" = 100'	Sheet number: C4
Checked by: G. MCKENZIE		Date: SEPTEMBER 2011	Plot Scale:
Submitted by: G. MCKENZIE	Dwg. No.: 6	File: K:\Libby_OU1\DWG\September 2011 dwg\C4 FINAL SUBGRADE PLAN.dwg	No.:



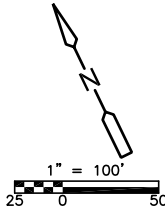


- NOTES:
1. PROPOSED FINAL GRADING SURFACE CONTOURS AND POINTS PROVIDED BY WGM GROUP, MISSOULA, MT.
 2. COORDINATE AND ELEVATION FILES WILL BE PROVIDED IN ELECTRONIC FORMAT.
 3. CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND STATE OF MONTANA LAWS GOVERNING ALL WORK SITE ACTIVITIES.
 4. TOPSOIL SHALL BE PLACED IN A 6 INCH LIFT TO FINAL GRADING ELEVATIONS AS SHOWN ON SHEET D1, DETAIL B, TYPICAL SECTION 1. PARKING AREAS SHALL BE RECLAIMED AS SHOWN ON SHEET D1, DETAIL B, SECTION 3.

ESTIMATED VOLUMES:

COMMON FILL	10,500 CY
TOPSOIL	5,240 CY
3/4" MINUS	6,920 CY
3" MINUS	1,300 CY
3-8"	12 CY
1.5-4"	30 CY

- LEGEND
- SEED RESTORATION (SEE TYPICAL SECTION 1 ON SHEET D1)
 - AREAS OUTSIDE OF EXTENT OF THIS DRAWING
 - ROAD AND PARKING AREAS
 - ROCK TRENCHES (SEE DETAIL B ON SHEET D2)
 - PROPOSED WGM FINAL SURFACE CONTOURS MAJOR
 - PROPOSED WGM FINAL SURFACE CONTOURS MINOR
 - PROPOSED WGM FINAL SURFACE CONTOURS MAJOR
 - PROPOSED WGM FINAL SURFACE CONTOURS MINOR
 - AREA 1 - FORMER EXPORT PLANT
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 - SEWER MANHOLE
 - FIRE HYDRANT
 - IRRIGATION VALVE
 - EXPOSED BURIED POWER LINES
 - DECORATIVE ROCKS
 - IRRIGATION MAIN
 - W MUNICIPAL WATER MAIN
 - S MUNICIPAL SANITARY SEWER
 - JUT DRY UTILITY LINES
 - T TELEPHONE LINES



- COMMON FILL
1. COMMON FILL SHALL CONSIST OF MINERAL SOIL SUBSTANTIALLY FREE OF ORGANIC MATERIAL, LOAM, WOOD, TRASH AND OTHER OBJECTIONABLE MATERIALS WHICH MAY BE COMPRESSIBLE OR WHICH CANNOT BE PROPERLY COMPACTED.
 2. COMMON FILL SHALL NOT CONTAIN ANY STONES LARGER THAN 2 INCHES IN THE LARGEST DIMENSION AND SHALL MEET THE GRADATION SHOWN ON TABLE 1 BELOW.
 3. COMMON FILL SHALL HAVE A LIQUID LIMIT LESS THAN 35 AND A PLASTICITY INDEX LESS THAN 10.

TABLE 1. COMMON FILL GRADATION

SIEVE SIZE	PERCENT FINES PER WEIGHT
2.0 INCHES	100
NO. 4	65 TO 90
NO. 40	30 TO 70
NO. 200	20 TO 40

TABLE 2. 3" MINUS GRADATION


SIEVE SIZE	PERCENT FINES PER WEIGHT
3.0 INCHES	100
NO. 4	25 TO 60
NO. 200	2 TO 12

GRADING LEGEND:

- X 67.05 FINISH ELEVATION (PLUS 2000')
- FG FINISH GRADE
- INV EDGE OF GRAVEL
- TOB INVERT
- TOD TOP OF BANK
- TOE TOP OF DITCH
- TOE TOE OF SLOPE

Revisions			
Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	8/30/11	GM

CDM Federal Programs Corporation




US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
K. MAINZHAUSEN
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Drawn by:
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Submitted by:
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US EPA
Region VIII
Denver, Colorado

LIBBY ASBESTOS PROJECT
LIBBY, MONTANA

**OU1-REMEDIATION ACTION
PROPOSED OVERALL GRADING
AND RESTORATION PLAN**

Scale: 1" = 100'

Date: SEPTEMBER 2011

Dwg. No.: 8

Sheet number:
C6

Plot Scale:

Design File:

File: K:\Libby_OU1\DWG\September 2011
dwg\C6 GRADING AND RESTORATION
No.: PLAN.dwg

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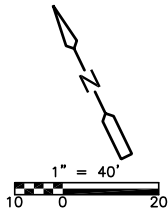
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- NOTES:
1. LEGEND INCLUDED IN SHEET C6.
 2. ROAD ALIGNMENT AND ELEVATIONS PROVIDED BY WGM GROUP, MISSOULA, MONTANA.

DAVIS CONTROL
5/8 REBAR "7322S"
N 1569086.3404
E 500017.1824
ELEV: 2065.71'

TIE TO EXISTING GRADE
AT MAX 5% SLOPE

PROPERTY LINE
(APPROXIMATE)

SEARCH AND RESCUE
BUILDING

DAVIS CONTROL
STEEL PIN
N 1568889.3481
E 499888.4295
ELEV: 2066.74'

ADJUST VALVE BOX TO
FINISHED GRADE

5' OPENING
PLACE STEEL LANDSCAPING
EDGER OR OTHER MATERIAL
BETWEEN GRAVEL AND GRASS
TO PREVENT GRAVEL MOVEMENT
TO BASIN, WITH OPENING AS
NOTED FOR RUNOFF.

GRAVEL DEPRESSION
(NO ROCK TRENCH)
INV 64.75

PI STA 4+31.77
N 1568843.2584
E 500070.1543
Δ 62.11'
R 100'
T 60.22'
L 108.40'

MATCH LINE SHEET C6A
MATCH LINE SHEET C6B

PI STA 8+24.46

PI STA 3+12.01
N 1569005.8529
E 500186.0439
Δ 105.18'
R 100'
T 130.74'
L 183.57'

PI STA 3+12.01
N 1569005.8529
E 500186.0439
Δ 105.18'
R 100'
T 130.74'
L 183.57'



PI STA 4+31.77
N 1568843.2584
E 500070.1543
Δ 62.11'
R 100'
T 60.22'
L 108.40'

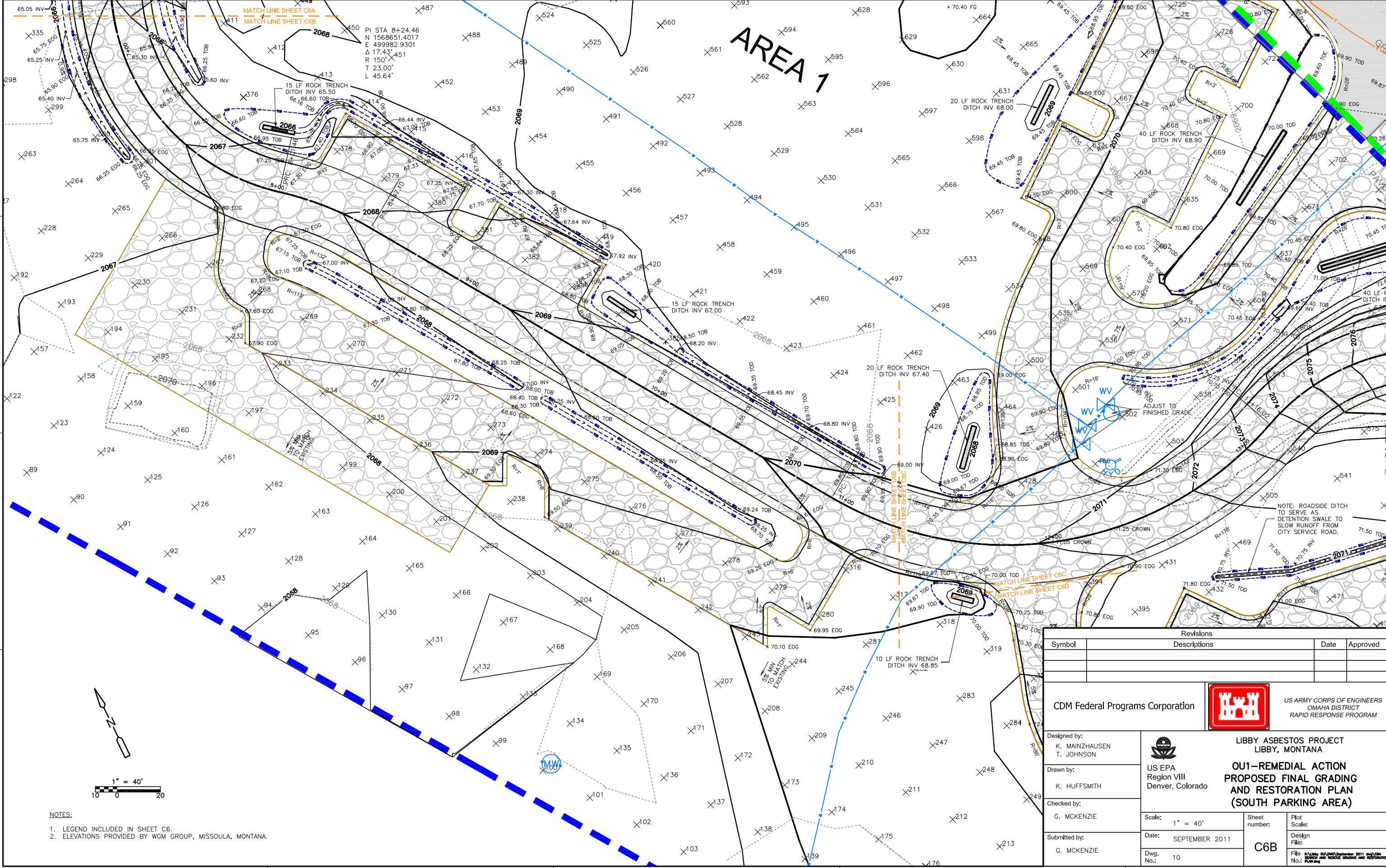
AREA 2

PAVILION

GRAVEL PARKING

Revisions		Date	Approved
Symbol	Descriptions		


CDM Federal Programs Corporation		 US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM	
Designed by: K. MAINZHAUSEN T. JOHNSON	 US EPA Region VIII Denver, Colorado	LIBBY ASBESTOS PROJECT LIBBY, MONTANA	
Drawn by: K. HUFFSMITH		OU1-REMEDIATION ACTION PROPOSED FINAL GRADING AND RESTORATION PLAN (SEARCH AND RESCUE AREA)	
Checked by: G. MCKENZIE		Scale: 1" = 40'	Sheet number: C6A
Submitted by: G. MCKENZIE	Date: SEPTEMBER 2011	Dwg. No.: 9	



NOTES:
1. LEGEND INCLUDED IN SHEET C6.
2. ELEVATIONS PROVIDED BY WGM GROUP, MISSOULA, MONTANA.

Revisions			
Symbol	Descriptions	Date	Approved

CDM Federal Programs Corporation




US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
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Checked by:
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Submitted by:
G. MCKENZIE



US EPA
Region VIII
Denver, Colorado

LIBBY ASBESTOS PROJECT
LIBBY, MONTANA

**OU1-REMEDIATION ACTION
PROPOSED FINAL GRADING
AND RESTORATION PLAN
(SOUTH PARKING AREA)**

Scale: 1" = 40'

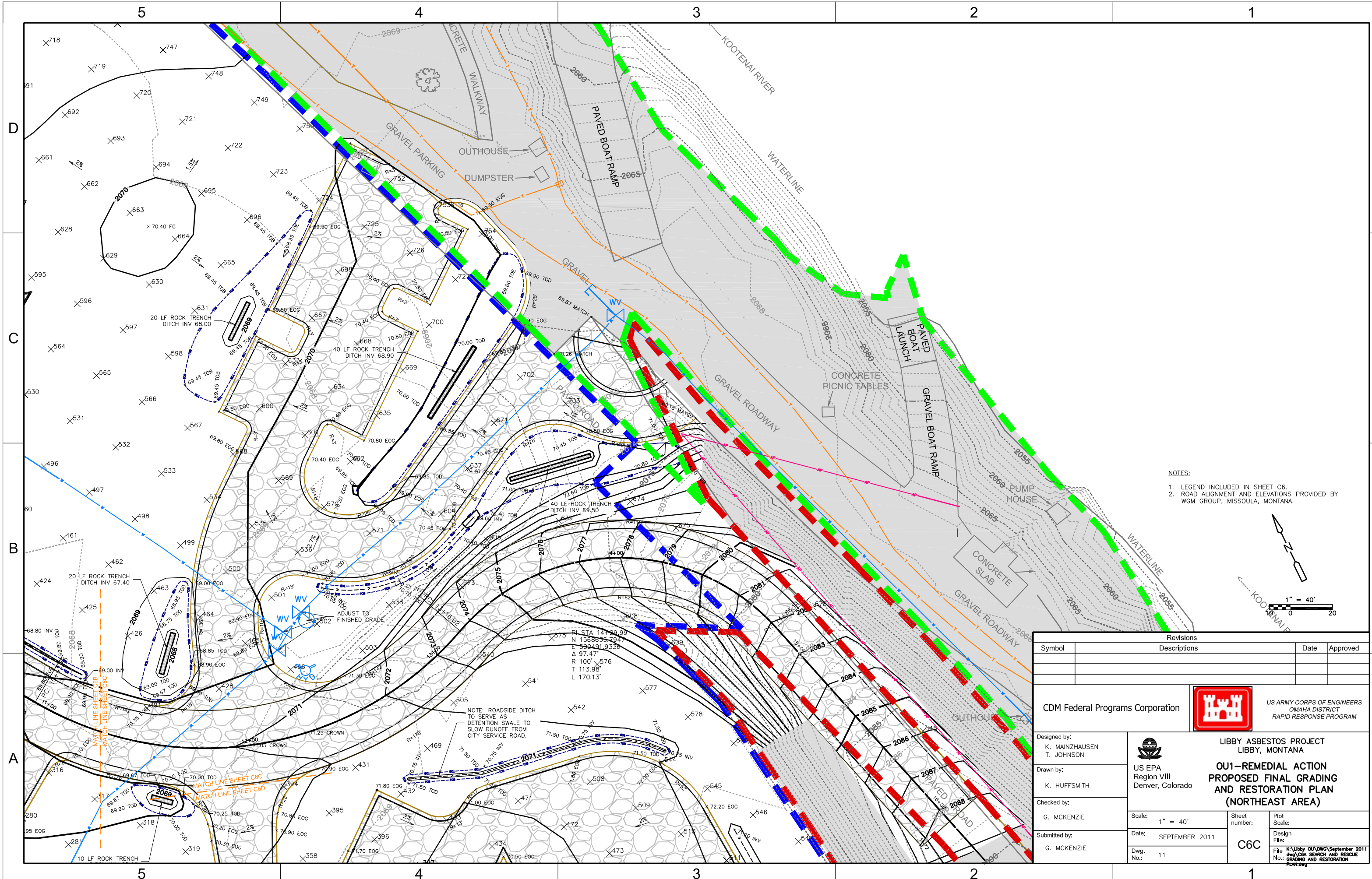
Date: SEPTEMBER 2011

Dwg. No.: 10

Sheet number:
C6B

Plot Scale:
Design File:
File: \\libby\OU1\rem\September 2011\dwg\OU1 REMEDIAL ACTION PROPOSED FINAL GRADING AND RESTORATION No.: PLAN.dwg


AREA 1



- NOTES:
- 1. LEGEND INCLUDED IN SHEET C6.
 - 2. ROAD ALIGNMENT AND ELEVATIONS PROVIDED BY WGM GROUP, MISSOULA, MONTANA.

Revisions			
Symbol	Descriptions	Date	Approved

CDM Federal Programs Corporation




US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
K. MAINZHAUSEN
T. JOHNSON

Drawn by:
K. HUFFSMITH

Checked by:
G. MCKENZIE

Submitted by:
G. MCKENZIE



US EPA
Region VIII
Denver, Colorado

LIBBY ASBESTOS PROJECT
LIBBY, MONTANA

**OU1-REMEDIAL ACTION
PROPOSED FINAL GRADING
AND RESTORATION PLAN
(NORTHEAST AREA)**

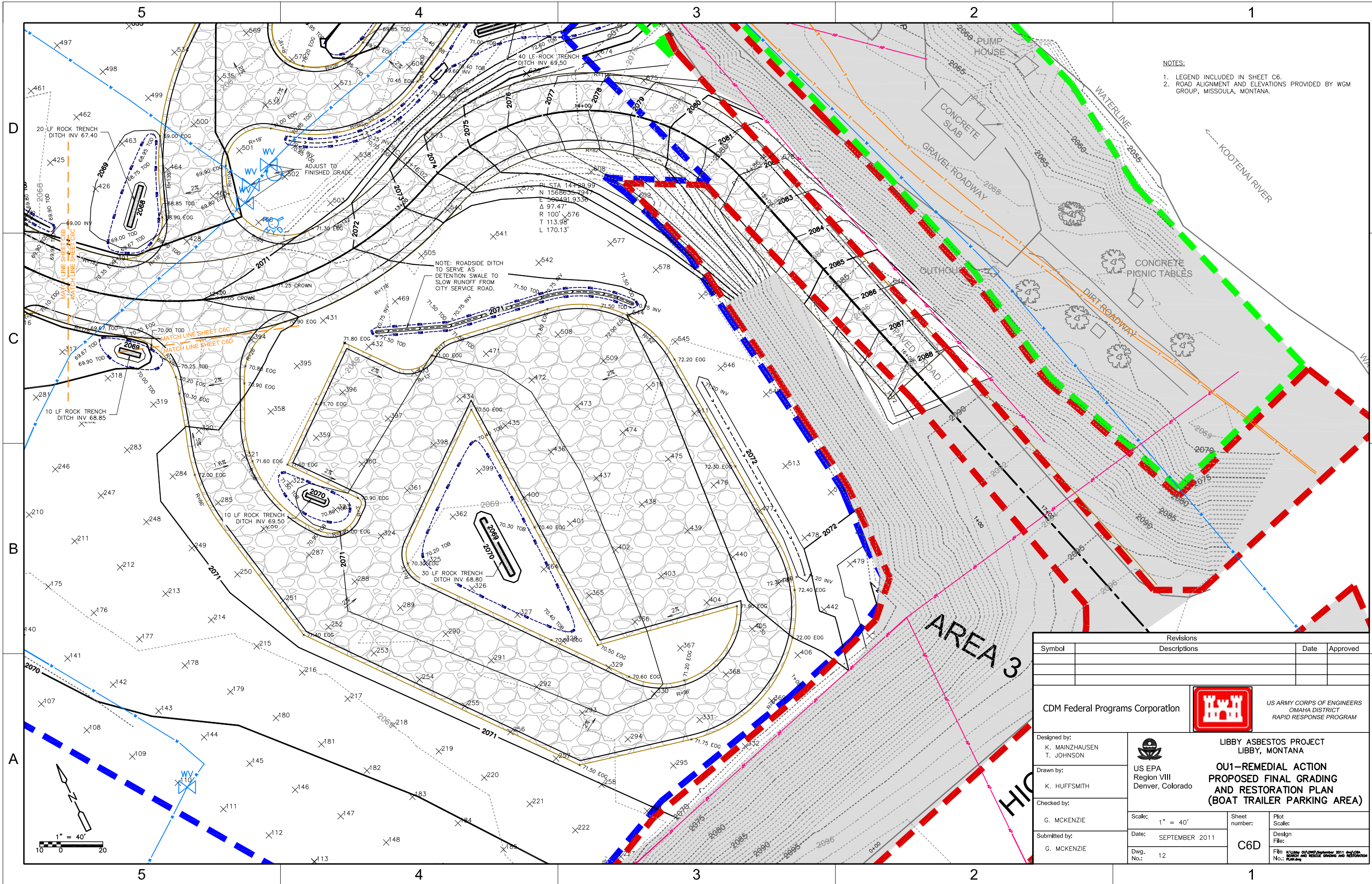
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Date: SEPTEMBER 2011

Dwg. No.: 11



Sheet number:
C6C

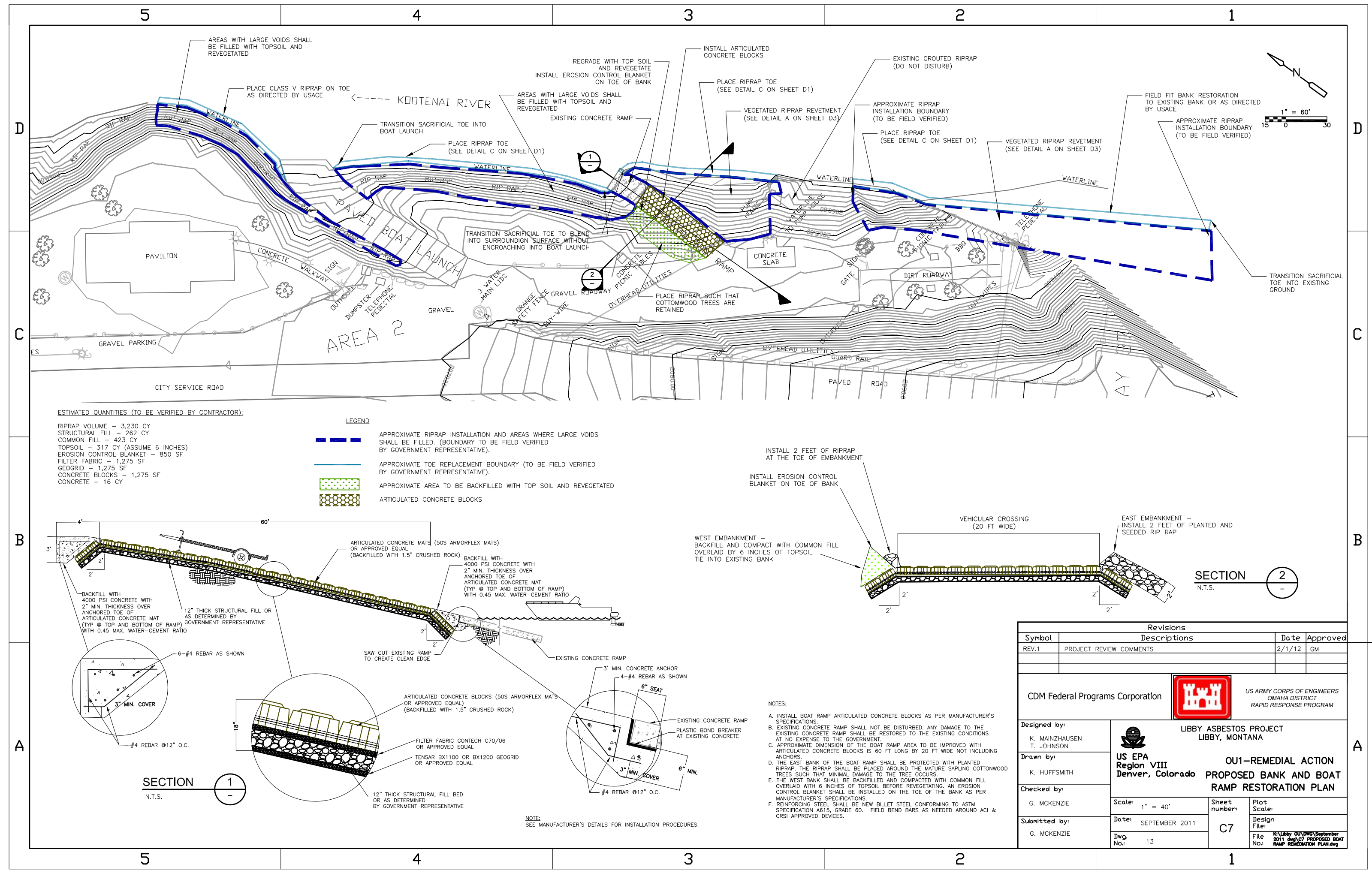
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File: K:\Libby_OU1\DWG\September 2011
No.: dwg\C6A SEARCH AND RESCUE
No.: GRADING AND RESTORATION
Powering



- NOTES:
1. LEGEND INCLUDED IN SHEET C6.
 2. ROAD ALIGNMENT AND ELEVATIONS PROVIDED BY WGM GROUP, MISSOULA, MONTANA.

Revisions		Date	Approved
Symbol	Descriptions		

CDM Federal Programs Corporation		 US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM	
Designed by: K. MAINZHAUSEN T. JOHNSON	 US EPA Region VIII Denver, Colorado	LIBBY ASBESTOS PROJECT LIBBY, MONTANA	
Drawn by: K. HUFFSMITH		OU1-REMEDIATION ACTION PROPOSED FINAL GRADING AND RESTORATION PLAN (BOAT TRAILER PARKING AREA)	
Checked by: G. MCKENZIE		Scale: 1" = 40'	Sheet number: C6D
Submitted by: G. MCKENZIE	Date: SEPTEMBER 2011	Dwg. No.: 12	



ESTIMATED QUANTITIES (TO BE VERIFIED BY CONTRACTOR):

RIPRAP VOLUME - 3,230 CY
STRUCTURAL FILL - 262 CY
COMMON FILL - 423 CY
TOPSOIL - 317 CY (ASSUME 6 INCHES)
EROSION CONTROL BLANKET - 850 SF
FILTER FABRIC - 1,275 SF
GEOGRID - 1,275 SF
CONCRETE BLOCKS - 1,275 SF
CONCRETE - 16 CY

LEGEND

- APPROXIMATE RIPRAP INSTALLATION AND AREAS WHERE LARGE VOIDS SHALL BE FILLED. (BOUNDARY TO BE FIELD VERIFIED BY GOVERNMENT REPRESENTATIVE).
- APPROXIMATE TOE REPLACEMENT BOUNDARY (TO BE FIELD VERIFIED BY GOVERNMENT REPRESENTATIVE).
- APPROXIMATE AREA TO BE BACKFILLED WITH TOP SOIL AND REVEGETATED
- ARTICULATED CONCRETE BLOCKS

NOTES:

- A. INSTALL BOAT RAMP ARTICULATED CONCRETE BLOCKS AS PER MANUFACTURER'S SPECIFICATIONS.
- B. EXISTING CONCRETE RAMP SHALL NOT BE DISTURBED. ANY DAMAGE TO THE EXISTING CONCRETE RAMP SHALL BE RESTORED TO THE EXISTING CONDITIONS AT NO EXPENSE TO THE GOVERNMENT.
- C. APPROXIMATE DIMENSION OF THE BOAT RAMP AREA TO BE IMPROVED WITH ARTICULATED CONCRETE BLOCKS IS 60 FT LONG BY 20 FT WIDE NOT INCLUDING ANCHORS.
- D. THE EAST BANK OF THE BOAT RAMP SHALL BE PROTECTED WITH PLANTED RIPRAP. THE RIPRAP SHALL BE PLACED AROUND THE MATURE SAPLING COTTONWOOD TREES SUCH THAT MINIMAL DAMAGE TO THE TREE OCCURS.
- E. THE WEST BANK SHALL BE BACKFILLED AND COMPACTED WITH COMMON FILL OVERLAIN WITH 6 INCHES OF TOPSOIL BEFORE REVEGETATING. AN EROSION CONTROL BLANKET SHALL BE INSTALLED ON THE TOE OF THE BANK AS PER MANUFACTURER'S SPECIFICATIONS.
- F. REINFORCING STEEL SHALL BE NEW BILLET STEEL CONFORMING TO ASTM SPECIFICATION A615, GRADE 60. FIELD BEND BARS AS NEEDED AROUND ACI & CRSI APPROVED DEVICES.

Revisions			
Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	2/1/12	GM

CDM Federal Programs Corporation



US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by:
K. MAINZHAUSEN
T. JOHNSON

Drawn by:
K. HUFFSMITH

Checked by:
G. MCKENZIE

Submitted by:
G. MCKENZIE



US EPA
Region VIII
Denver, Colorado

OU1-REMEDIAL ACTION
PROPOSED BANK AND BOAT
RAMP RESTORATION PLAN

Scale: 1" = 40'

Date: SEPTEMBER 2011

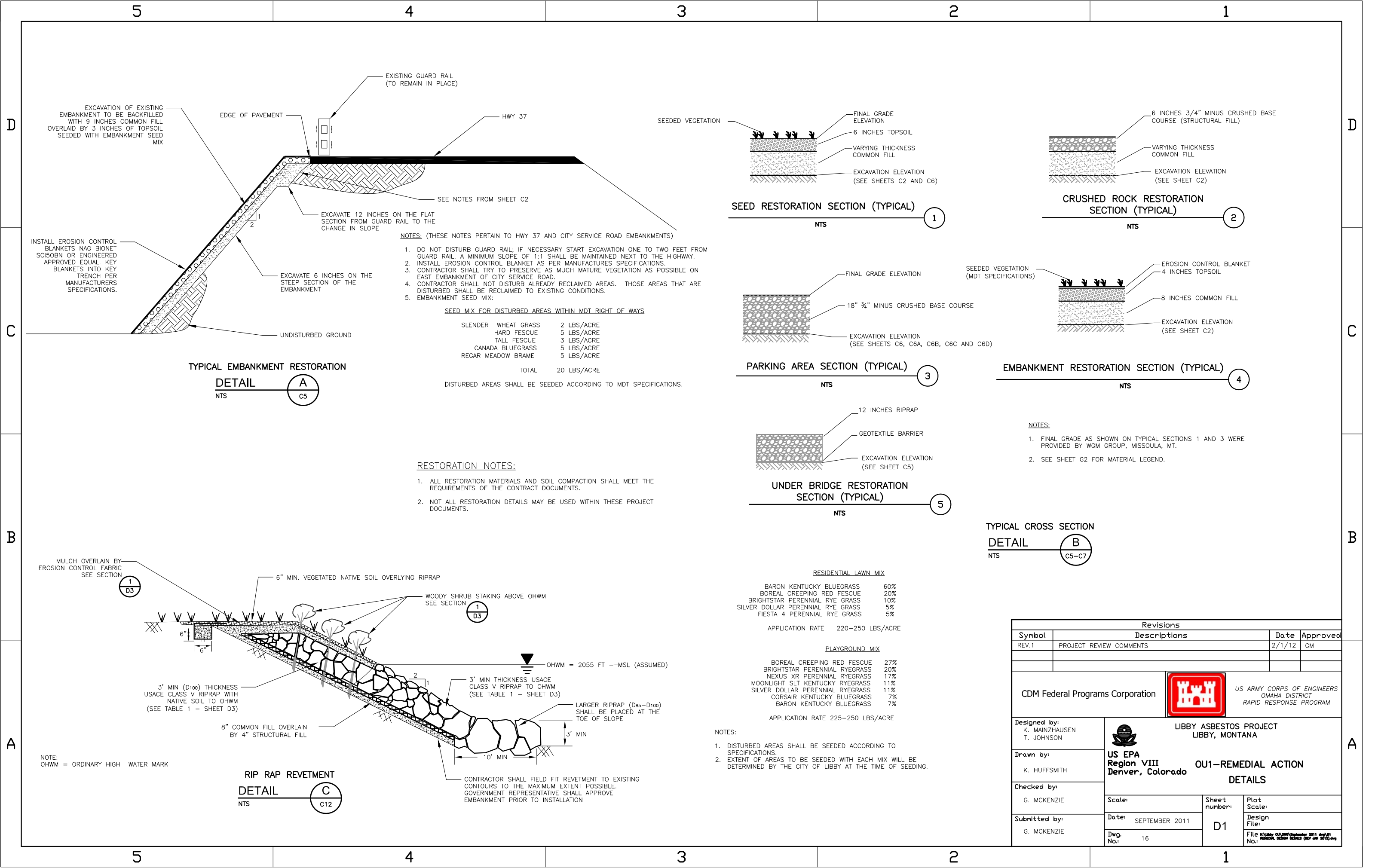
Dwg. No.: 13

Sheet number: C7

Plot Scale:

Design File:

File No.: K:\Libby_OU1\DWG\September 2011\dwg\C7 PROPOSED BOAT RAMP RESTORATION PLAN.dwg



NOTES: (THESE NOTES PERTAIN TO HWY 37 AND CITY SERVICE ROAD EMBANKMENTS)

1. DO NOT DISTURB GUARD RAIL; IF NECESSARY START EXCAVATION ONE TO TWO FEET FROM GUARD RAIL. A MINIMUM SLOPE OF 1:1 SHALL BE MAINTAINED NEXT TO THE HIGHWAY.
2. INSTALL EROSION CONTROL BLANKET AS PER MANUFACTURERS SPECIFICATIONS.
3. CONTRACTOR SHALL TRY TO PRESERVE AS MUCH MATURE VEGETATION AS POSSIBLE ON EAST EMBANKMENT OF CITY SERVICE ROAD.
4. CONTRACTOR SHALL NOT DISTURB ALREADY RECLAIMED AREAS. THOSE AREAS THAT ARE DISTURBED SHALL BE RECLAIMED TO EXISTING CONDITIONS.
5. EMBANKMENT SEED MIX:

SEED MIX FOR DISTURBED AREAS WITHIN MDT RIGHT OF WAYS

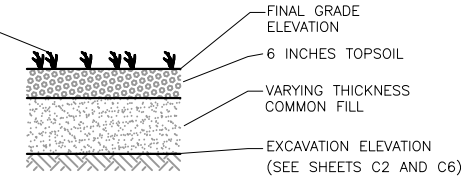
SLENDER WHEAT GRASS	2 LBS/ACRE
HARD FESCUE	5 LBS/ACRE
TALL FESCUE	3 LBS/ACRE
CANADA BLUEGRASS	5 LBS/ACRE
REGAR MEADOW BRAME	5 LBS/ACRE
TOTAL	20 LBS/ACRE

DISTURBED AREAS SHALL BE SEEDED ACCORDING TO MDT SPECIFICATIONS.

RESTORATION NOTES:

1. ALL RESTORATION MATERIALS AND SOIL COMPACTION SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. NOT ALL RESTORATION DETAILS MAY BE USED WITHIN THESE PROJECT DOCUMENTS.

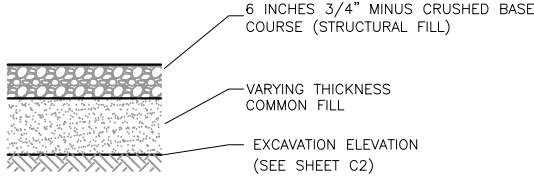
SEED RESTORATION SECTION (TYPICAL)



NTS

1

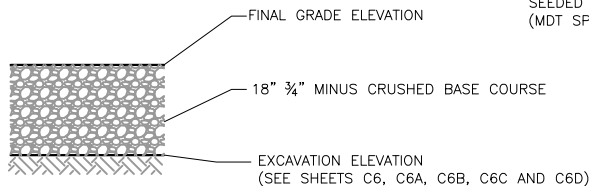
CRUSHED ROCK RESTORATION SECTION (TYPICAL)



NTS

2

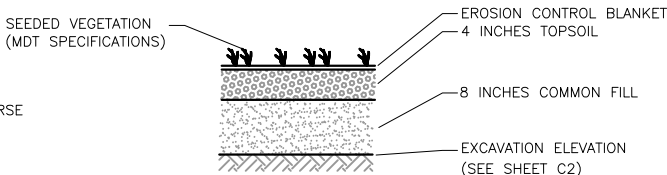
PARKING AREA SECTION (TYPICAL)



NTS

3

EMBANKMENT RESTORATION SECTION (TYPICAL)



NTS

4

NOTES:

1. FINAL GRADE AS SHOWN ON TYPICAL SECTIONS 1 AND 3 WERE PROVIDED BY WGM GROUP, MISSOULA, MT.
2. SEE SHEET G2 FOR MATERIAL LEGEND.

TYPICAL CROSS SECTION

DETAIL

NTS

B

C5-C7

RESIDENTIAL LAWN MIX

BARON KENTUCKY BLUEGRASS	60%
BOREAL CREEPING RED FESCUE	20%
BRIGHTSTAR PERENNIAL RYE GRASS	10%
SILVER DOLLAR PERENNIAL RYE GRASS	5%
FIESTA 4 PERENNIAL RYE GRASS	5%

APPLICATION RATE 220-250 LBS/ACRE

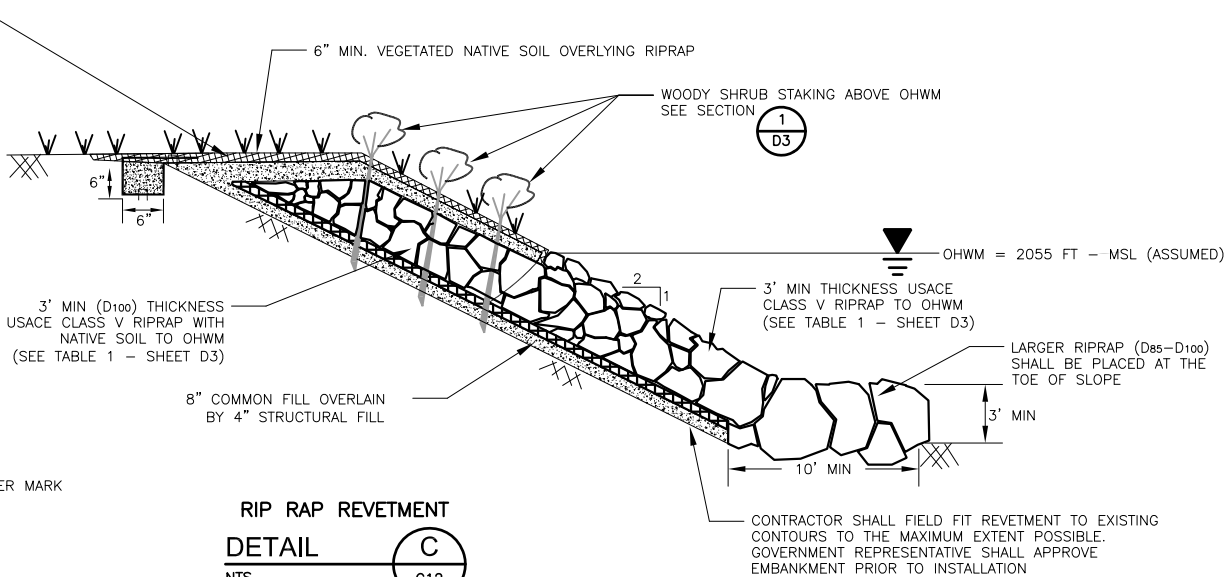
PLAYGROUND MIX

BOREAL CREEPING RED FESCUE	27%
BRIGHTSTAR PERENNIAL RYEGRASS	20%
NEXUS XR PERENNIAL RYEGRASS	17%
MOONLIGHT SLT KENTUCKY RYEGRASS	11%
SILVER DOLLAR PERENNIAL RYEGRASS	11%
CORSAIR KENTUCKY BLUEGRASS	7%
BARON KENTUCKY BLUEGRASS	7%

APPLICATION RATE 225-250 LBS/ACRE

NOTES:

1. DISTURBED AREAS SHALL BE SEEDED ACCORDING TO SPECIFICATIONS.
2. EXTENT OF AREAS TO BE SEEDED WITH EACH MIX WILL BE DETERMINED BY THE CITY OF LIBBY AT THE TIME OF SEEDING.



RIP RAP REVETMENT



DETAIL

NTS

C

C12

NOTE:
OHWM = ORDINARY HIGH WATER MARK

Revisions			
Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	2/1/12	GM
CDM Federal Programs Corporation		<div><div>US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM</div></div>	
Designed by: K. MAINZHAUSEN T. JOHNSON		<div><div>LIBBY ASBESTOS PROJECT LIBBY, MONTANA</div></div>	
Drawn by: K. HUFFSMITH		<div><div>US EPA Region VIII Denver, Colorado</div><div>OU1-REMEDIAL ACTION DETAILS</div></div>	
Checked by: G. MCKENZIE		Scale:	Sheet number:
Submitted by: G. MCKENZIE		Date: SEPTEMBER 2011	Plot Scale:
		Dwg. No.: 16	Design File:
			File #Libby_OU1RemedialAction_2011.dwg Revision: DESIGN DETAILS (REV JAN 2012).dwg

5

4

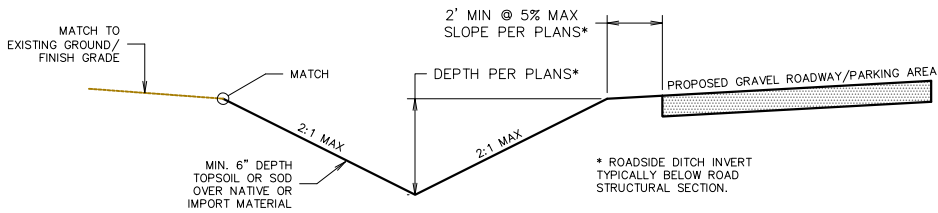
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2

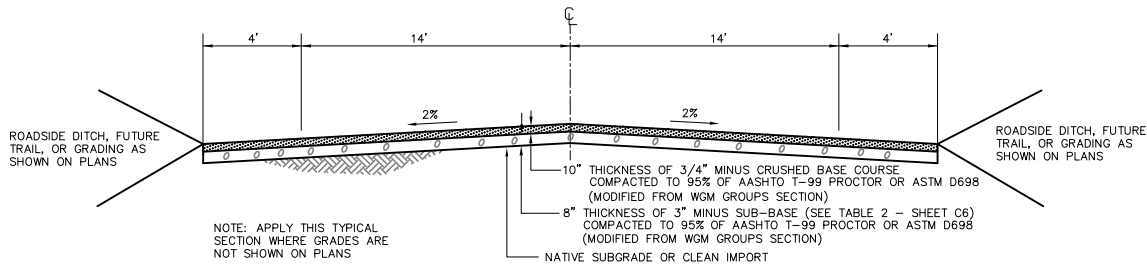
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D

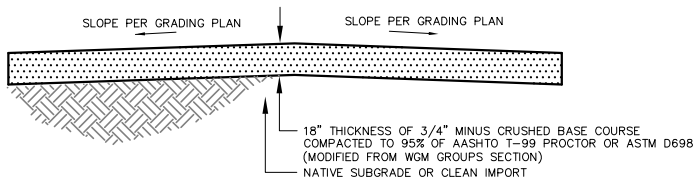
D



TYPICAL ROADSIDE DITCH
DETAIL A
NTS C6

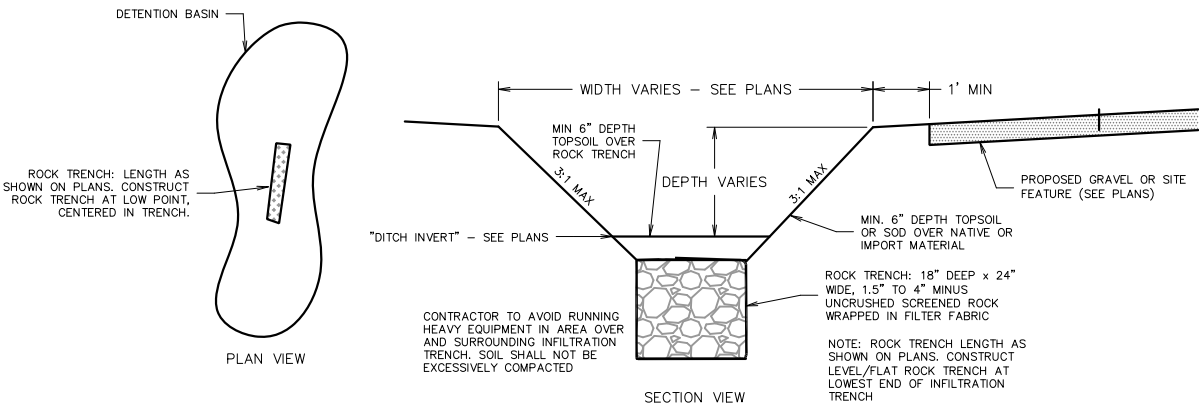


TYPICAL CITY SERVICE ROAD SECTION
DETAIL B
NTS C6

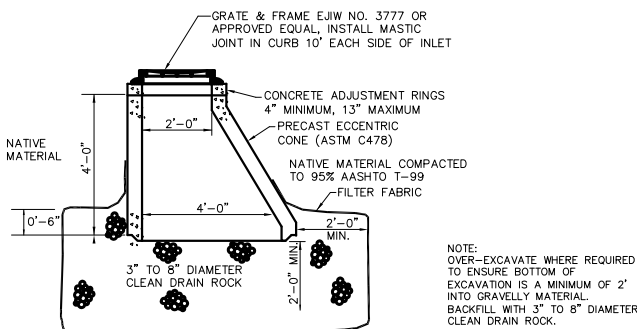


TYPICAL GRAVEL PARKING SECTION
DETAIL C
NTS C6



NOTE:
1. DETAILS ON THIS SHEET WERE PROVIDED BY WGM GROUP, MISSOULA, MT.



TYPICAL DETENTION BASIN/ROCK TRENCH
DETAIL D
NTS C6



TYPICAL SUMP DETAIL
DETAIL D
NTS C6

Revisions			
Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	8/30/11	GM
CDM Federal Programs Corporation		<div><div>US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM</div></div>	
Designed by: WGM GROUP, MISSOULA, MT	<div><div>LIBBY ASBESTOS PROJECT LIBBY, MONTANA</div></div>		
Drawn by: K. HUFFSMITH	US EPA Region VIII Denver, Colorado		
Checked by: G. MCKENZIE	OU1-REMEDIAL ACTION WGM DETAILS		
Submitted by: G. MCKENZIE	Scale:	Sheet number:	Plot Scale:
	Date: SEPTEMBER 2011	D2	Design File:
Dwg. No.: 17	File K:\Libby_OU1\DWG\September 2011 No.: dwg\02 WGM DESIGN DETAILS.dwg		

D

C

B

A

TABLE 1- USACE Class V Riprap Sizes

Weight estimated as yd^3 , where d corresponds to the intermediate rock dimension and y is the rock specific gravity assumed to be 2.65.

5

4

- 3

- WILLOW STAKING PATTERN
- DETAIL**
- N.T.S.
- A**
- C7



D

C

B

- E. PLAIN RIPRAP, PLACED BELOW THE ORDINARY HIGH WATER MARK LINE SHALL CONFORM TO THE GRADATION CONTAINED IN TABLE 1.

A1

5

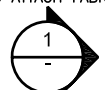
4

3

2

1

SILT FENCE MATERIAL. USE STAPLES OR WIRE RINGS @
24" O.C. TO ATTACH FABRIC TO WIRE



2"x2"x14GA WIRE
FABRIC OR EQUIVALENT.

TOP OF FABRIC.

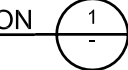
GROUND LEVEL

BURY BOTTOM OF
SILT FENCE MATERIAL
IN 6"x6" TRENCH

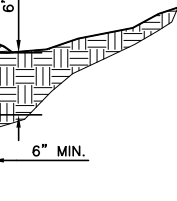
8' MAX.

SILT FENCE SECTION

NTS



2"x4" WOOD OR STEEL FENCE POSTS



2"x2"x14GA WIRE
FABRIC OR EQUIVALENT.
SILT FENCE MATERIAL.

2'

4'

1.5'

6" MIN.

SILT FENCE DETAIL

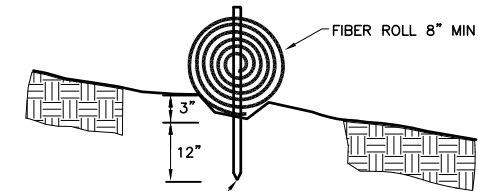
NTS

FIBER ROLLS NOTES:

- 1) A FIBER ROLL CONSISTS OF AN EROSION CONTROL BLANKET MATERIAL THAT IS PREFABRICATED, OR ROLLED AND BOUND IN THE FIELD INTO A TIGHT TUBULAR ROLL AND PLACED ON THE FACE OF SLOPES AT REGULAR INTERVALS TO INTERCEPT RUNOFF, REDUCE ITS FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW, AND PROVIDE SOME REMOVAL OF SEDIMENT FROM THE RUNOFF.
- 2) FIBER ROLLS MAY BE USED ALONG THE TOP, FACE, AND AT GRADE BREAKS OF EXPOSED AND ERODIBLE SLOPES TO SHORTEN SLOPE LENGTH AND SPREAD RUNOFF AS SHEET FLOW. ROLLS MAY BE USED AS CHECK DAMS IF APPROVED BY THE ENGINEER. FOR USE AS CHECK DAMS, PLACE FIBER ROLLS AT 20 FEET MAXIMUM SPACING OR AS APPROVED BY THE ENGINEER.
- 3) ALTHOUGH FIBER ROLLS PROVIDE SOME SEDIMENT REMOVAL, FIBER ROLLS ARE NOT TO BE USED IN PLACE OF A LINEAR SEDIMENT BARRIER (I.E., SILT FENCE, SANDBAG BARRIER, OR STRAW BARRIER).

STABILIZED CONSTRUCTION ENTRANCE/EXIT NOTES:

- 1) A STABILIZED CONSTRUCTION ACCESS IS A DEFINED POINT OF ENTRANCE/EXIT TO A CONSTRUCTION SITE THAT IS STABILIZED TO REDUCE THE TRACKING OF MUD AND DIRT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES.
- 2) USE STABILIZED CONSTRUCTION ACCESSES WHERE DIRT AND MUD MAY BE TRACKED ONTO PUBLIC ROADS, ADJACENT TO WATER BODIES, WHERE POOR SOILS ARE ENCOUNTERED, WHERE DUST MAY BE A PROBLEM, OR AS SPECIFIED BY THE ENGINEER.
- 3) CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES WITH GRAVEL CONSISTING OF 100% PASSING THE 2" SCREEN AND A MAXIMUM OF 10% PASSING THE 1/2" SIEVE OR OTHER ENGINEER APPROVED MATERIAL. PROPERLY GRADE ENTRANCES/EXITS TO PREVENT RUNOFF FROM LEAVING THE SITE. PLACE A MOUNDED BERM OF MATERIAL IF REQUIRED TO PREVENT STORM WATER RUN ON/ RUNOFF AND/OR PROVIDE COVER FOR DRAIN PIPE. ROUTE STORM WATER RUNOFF TO A SEDIMENT CONTROL DEVICE BEFORE RUNOFF EXITS THE SITE.
- 4) STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED TO PREVENT TRACKING OF SEDIMENT OFF OF THE SITE. REMOVE AND REPLACE AGGREGATE WHEN VOIDS ARE FILLED OR AS DIRECTED BY THE ENGINEER.



3/4" X 3/4" WOOD
STAKES AT 48" MIN
SPACING

FIBER ROLLS SECTION

NTS



INSTALL A FIBER ROLL
ALONG A CONTOUR

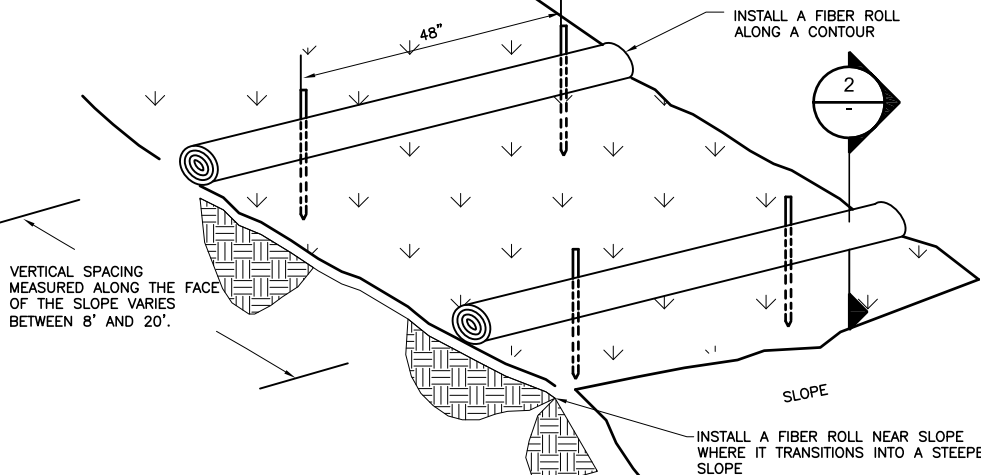


SLOPE

INSTALL A FIBER ROLL NEAR SLOPE
WHERE IT TRANSITIONS INTO A STEEPER
SLOPE

FIBER ROLLS DETAIL

NTS



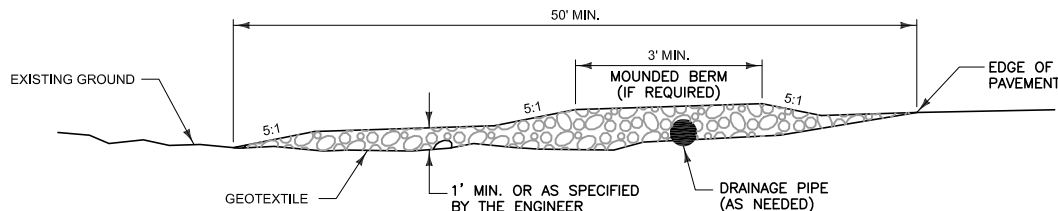
VERTICAL SPACING
MEASURED ALONG THE
FACE OF THE SLOPE VARIES
BETWEEN 8' AND 20'.

SILT FENCE NOTES:

- 1) A SILT FENCE IS A SINGLE OR SERIES OF FILTER FABRIC SEDIMENT BARRIER STRETCHED AND ATTACHED TO SUPPORTING POSTS. THE FENCE BOTTOM IS ENTRENCHED.
- 2) SILT FENCES ARE USED TO CAPTURE SEDIMENT CONTAINED IN SHEET FLOWS BY RETAINING SOME OF THE ERODED SOIL PARTICLES AND SLOWING THE RUNOFF VELOCITY TO ALLOW PARTICLE SETTLING. APPLICATIONS INCLUDE WATER RESOURCE PROTECTION, INLET PROTECTION, BANK PROTECTION, AND TOE OF SLOPE PROTECTION. INSTALL SILT FENCES PRIOR TO DISTURBING AREAS REQUIRING THIS BMP OR AS SLOPE GRADES ARE ACHIEVED. MAXIMUM CUT OR FILL SLOPE FOR A SILT FENCE IS 2:1.
- 3) THERE ARE TWO TYPES OF SILT FENCE INSTALLATIONS:

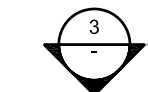
- A. UNSTABILIZED - SILT FENCE SUPPORTED WITH EITHER WOOD OR METAL FENCE POSTS.
 - B. STABILIZED - SILT FENCE SUPPORTED WITH METAL POSTS AND WITH WOVEN WIRE BACKING.
- 4) ENTRENCHMENT - THE INITIAL SILT FENCE INSTALLATION REQUIRES ONLY THE VERTICAL ENTRENCHMENT COMPONENT UNLESS THE ENGINEER DETERMINES BOTH VERTICAL AND HORIZONTAL ENTRENCHMENT COMPONENTS ARE NECESSARY. IF THE FENCE REQUIRES REPLACEMENT DUE TO FAILURE FROM PULLOUT OR UNDERCUTTING, THE SUBSEQUENT INSTALLATION WILL INCLUDE BOTH VERTICAL AND HORIZONTAL ENTRENCHMENT COMPONENTS.
 - 5) USE SILT FENCES BETWEEN THE EDGE OF CONSTRUCTION DISTURBANCES AND A WATER RESOURCE, AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. POSITION THE BARRIER TO PREVENT SEDIMENT FROM ENTERING DRAINAGE. DO NOT PLACE THE BARRIER ACROSS LIVE STREAMS. WOVEN WIRE BACKING IS NECESSARY WHEN DEALING WITH HEAVIER FLOW VELOCITIES AND SEDIMENT OR AS A ROCK BARRIER. REMOVE SEDIMENT FROM BEHIND THE FENCE WHEN IT ACCUMULATES TO ONE-THIRD THE ORIGINAL HEIGHT. EITHER GRADE AND SEED OR REMOVE THE SEDIMENT DEPOSITS PRIOR TO REMOVAL OF THE FENCE. THE MINIMUM DISTANCES BETWEEN SILT FENCES WHEN USED ON SLOPES FOR SEDIMENT RETENTION ARE AS FOLLOWS:

- ON SLOPES FROM 2% TO 3% PLACE SILT FENCES AT 500 FEET SPACING APART
- ON SLOPES FROM 3% TO 4% PLACE SILT FENCES AT 300 FEET SPACING APART
- ON SLOPES GREATER THAN 4% PLACE SILT FENCES AT 150 FEET SPACING APART

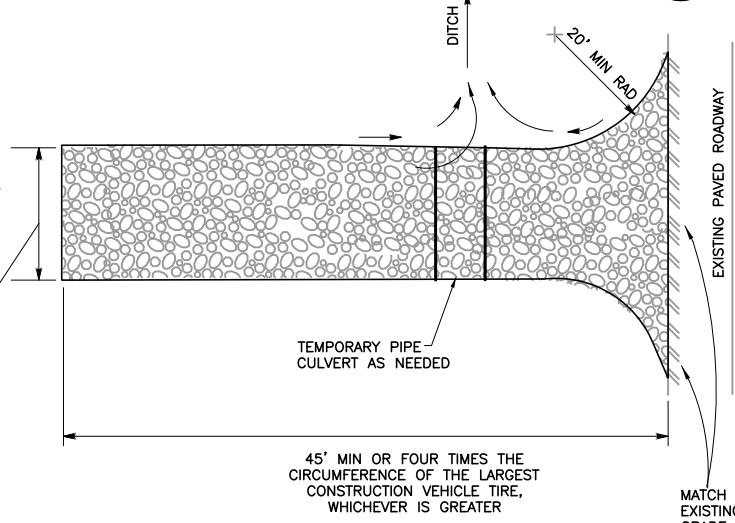


SECTION

NTS

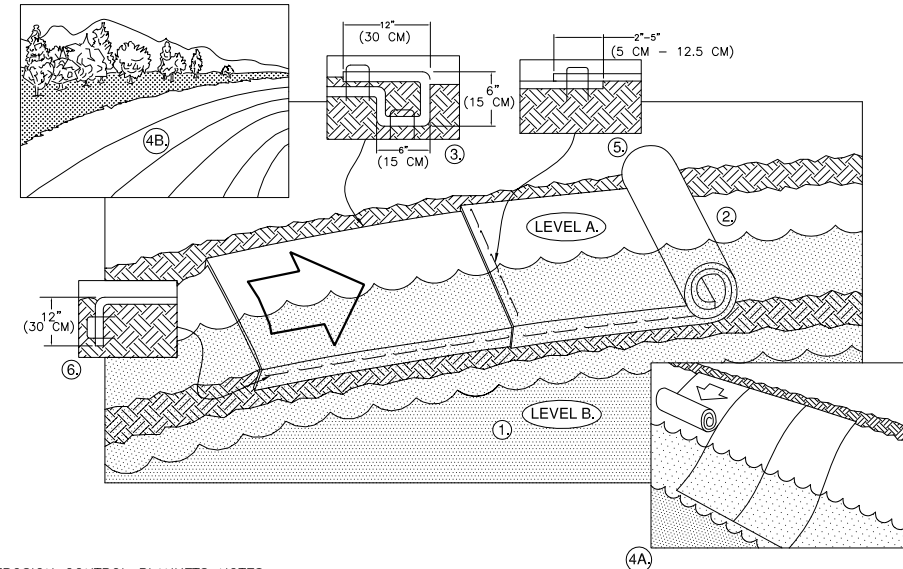


WIDTH AS REQUIRED TO
ACCOMMODATE
ANTICIPATED TRAFFIC



STABILIZED CONSTRUCTION ENTRANCE

NTS



EROSION CONTROL BLANKETS NOTES:

- 1) FOR EASIER INSTALLATION, LOWER WATER FROM LEVEL A TO LEVEL B BEFORE INSTALLATION.
- 2) PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
- 3) BEGIN AT THE TOP OF THE SHORELINE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BACK OVER SEED AND COMPACTED SOIL. SECURE OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- 4) ROLL RECP's EITHER (A.) DOWN THE SHORELINE FOR LONG BANKS, (TOP TO BOTTOM) OR (B.) HORIZONTALLY ACROSS THE SHORELINE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- 5) THE EDGES OF ALL HORIZONTAL AND VERTICAL SEAMS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP.
NOTE: * SEAM OVERLAP SHOULD BE SHINGLED ACCORDING TO PREDOMINANT EROSION ACTION.
- 6) THE EDGE OF THE BLANKET AT OR BELOW NORMAL WATER LEVEL MUST BE ANCHORED BY PLACING THE STAKES/STAPLES IN A 12" DEEP X 6" WIDE ANCHOR TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART IN THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING (STONE OR SOIL MAY BE USED AS BACKFILL.)
NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.
- 7) DRAWINGS PROVIDED BY NORTH AMERICAN GREEN.

EROSION CONTROL BLANKET

DETAIL

NTS



D1-3

Revisions			
Symbol	Descriptions	Date	Approved
REV.1	PROJECT REVIEW COMMENTS	02/12	G.M.
CDM Federal Programs Corporation			
US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM			
Designed by: J. KOTSON	LIBBY ASBESTOS PROJECT LIBBY, MONTANA		
Drawn by: J. KOTSON	US EPA Region VIII Denver, Colorado		
Checked by: T. JOHNSON	OU1-REMEDIAL ACTION STORMWATER MANAGEMENT DETAILS		
Submitted by: G. MCKENZIE	Scale: Date: SEPTEMBER 2011 Dwg. No.: 19	Sheet number: D4	Plot Scale: Design File: File K:\Libby OU1\DWG\September 2011 No. 19.dwg